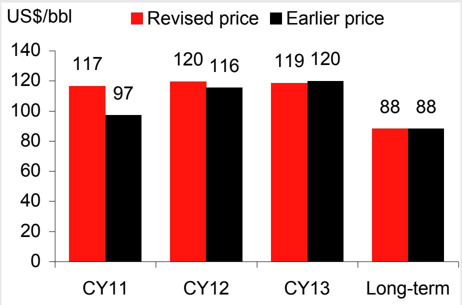
Macquarie
Equities Research

MACQUARIE

The Global Oil & Gas Specialist

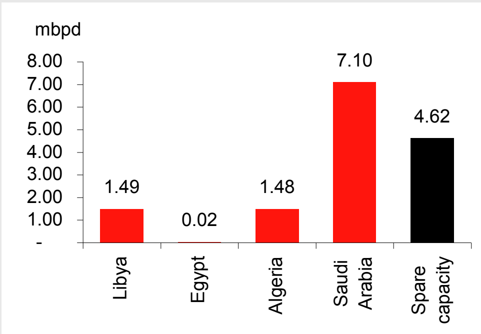
ASIA

Change in Brent crude price estimates



Source: Macquarie Research, January 2011

Exports from Middle East countries at risk vs global spare capacity



Source: Bloomberg, Macquarie Research, March 2011

Companies levered to crude prices

Company	Code	Reco	PAT revision	TP rev.
Inpex	1605-JP	OP	FY12: +27.4%	0%
Japex	1662 JP	OP	FY12: +26%	0%
CNOOC	883 HK	N	CY11: +21%	+ 6%
PTT E&P	PTTEP BK	OP	CY11: +20%	9%
PetroChina	(857 HK	OP	CY11: +16%	+ 2%
JX Holdings	5020-JP	OP	FY12: +8.2%	0%
Sinopec	(386 HK	N	CY11: +8%	+ 3%
SK Innovation	096770 KS	OP	CY11: +7.4%	0%
Cairn India	CAIR IN	UP	FY12: +7.1%	+4%

Source: Macquarie Research, March 2011

Jal Irani
+91 22 6653 3040 jal.irani@macquarie.com
Shawn Park
+82 2 3705 8669 shawn.park@macquarie.com
Trevor Buchinski, CFA
+66 2 694 7829 trevor.buchinski@macquarie.com
Polina Diyachkina
+81 3 3512 7886 polina.diyachkina@macquarie.com
Linda Huang, CFA
+852 3922 4068 linda.huang@macquarie.com

15 March 2011

Asia oil, refining & petchem.

Impact of MENA crises + Japan quake

Event

- **MENA shaken:** Macquarie's oil economist Jan Stuart has raised his CY11E Brent crude price estimates by ~20% (while more-or-less maintaining the longer term estimates) on the back of the Middle East and North Africa (MENA) turmoil affecting crude production. The Libyan crisis that has affected most of its ~1.5mbpd exports (i.e. 33% of global spare capacity) has exacerbated Middle East problems.
- **East Asia quakes:** The devastating earthquake and tsunami that struck Japan on Friday have forced emergency shutdowns at 11 nuclear reactors and these could be offline for months, and 2 of which are permanently offline. These shutdowns have removed 10.9 GW of generating capacity, about 23% of Japan's total nuclear capacity and 4% of its total electrical generating capacity. We expect that LNG and oil products will need to fill the void. This would equate to about 0.24mbpdoe of incremental demand, equivalent to 11 mmtpa of LNG. This equates to about 5% of worldwide LNG demand.

Country-specific implications

- **Asian import bill to surge:** China, Japan and India are the #2, #3 and #4 in global oil consumption. Overall, Asia (ex-Middle East/Russia) consumes 30% of the world's oil, and its thirst is growing at a 5-year CAGR of 1.4%. Hence, we expect Asian economies to be hit hard by the burgeoning oil import bill.
- **China:** As a pure upstream player, CNOOC is the main beneficiary of surging crude oil prices. PetroChina is also heavily oil levered, with 81% EBIT contribution from upstream. Sinopec is the least sensitive due to a larger downstream presence, which is more sensitive to price hikes for fuels.
- **Japan:** Japan upstream players Japex and Inpex are the most leveraged to crude prices, and see ~26% upgrades to our FY12E earnings. The shutdown of ~50% of JX holding's refining capacity (2-3 weeks at least for turnaround) has dragged the stock down by 15%, which adequately captures the lower earnings and potential Y30-40bn of writedowns, in our belief.
- **India:** Only Cairn India is a pure oil play (revised FY12E PAT +7.1%, TP +4.2%), however we downgrade Cairn to UP due to a significant run-up. GAIL benefits marginally from increased petchem/LPG pricing (crude-dependent) for its products made from fixed-price gas. Gross subsidy estimates for FY12 jump to US$33bn (+57%), up ~100% YoY, implying the government would have to substantially increase support and/or increase fuel prices.
- **Korea:** SK Innovation has a small upstream presence, and its downstream margins also benefit from the rub-off effects of improved crude pricing.
- **Thailand:** PTTEP is the only clear beneficiary in the Thai oil and gas space. It has 70% gas and 30% oil exposure, hence the positive impact is moderated.

Outlook

- **Unregulated Asian oil stocks are positively impacted** in general, but upstream majors (see table alongside) are prime gainers. Stocks with the highest earnings upgrades are Inpex (+27% FY12), Japex (+26%) and CNOOC (+21%) (see figs 15-17 for more details).
- **Regional sector top picks are Petrochina, RIL, and Inpex**

Excerpts from our oil economist Jan Stuart's latest view on crude prices

2011 Brent oil prices to average US$117/b (+20% on prior est.)

We hike our forecast 2011 average Brent crude oil price up 20% to US$117/b. First quarter prices already track toward US$105/b and even a muted seasonal trend lifts 2Q to US$116, in our view. 2H prices should average out modestly higher still if indeed demand holds up and refinery margins track higher. Next year, without further large supply disruptions, would look very similar to the back half of this one, and averages out to US$120/b, about 4% higher than what we had before and similar to our old 2013 projection. This is also the level that, if it holds long enough, should begin to *erode* oil demand growth. Our new, marginally lower average for 2013 reflects this rather benign unwinding of tensions.

In addition, we widen the discount of WTI to Brent through the forecast range. Our forecast differentials of Asian benchmarks Tapis and Dubai drift modestly further apart than before as well. We did leave our Long Run price alone (US$90/b WTI).

Driving prices up

- Obviously the very real and significant supply interruption involving Libya's civil war tightens the global supply demand equation. It effectively takes spare capacity down to 3 million barrels a day about one year earlier than we projected two months ago.
- As this year unfolds, simple seasonal trends should take global refiner crude oil demand from its current lows to a seasonal plateau that normally stretches from July through early September and is about 4 million barrels a day higher.
- A better gasoline season than last year and still building middle distillate strength help support that plateau and keep pressure on oil markets through year's end.
- In our new base case Opec has less spare capacity and will no longer want to moderate prices aggressively in 2H – which had been our prior assumption.
- And lastly, with risk this high the appetite to sell will be less and limits downside.

Risks

Obviously there is further supply risk from the upheavals across MENA. Indeed, anyone could project +US$200 oil if another major oil exporter crumbles. We'd point out, however, that if we are simply over-estimating consumer vulnerability to high prices, oil demand could again surprise to the upside and push prices to new records.

That said, downside risk is bigger in the very short-term, speculative net long positions in futures are high and key markets are still quite loose seasonally.

Fig 1 Our take on the familiar metrics of global oil fundamentals

(Million barrels daily)	2007	2008	2009	Q3-'10	Q4-'10	Q1-'11E	Q2-'11E	Q3-'11E	Q4-'11E	2010	2011E
Global demand	86.6	85.9	85.2	89.4	90.0	89.6	89.7	91.7	91.9	88.4	90.7
YoY change	1.7%	-0.8%	-0.8%	4.5%	3.9%	3.4%	2.6%	2.5%	2.1%	3.7%	2.6%
Less non-Opec supply	50.7	50.5	51.3	52.4	53.2	53.2	53.3	53.3	54.2	52.5	53.5
Less Opec non-crude	4.3	4.3	4.7	5.4	5.3	5.2	5.4	5.5	5.5	5.3	5.5
Less Iraq	2.0	2.3	2.4	2.4	2.5	2.6	2.7	2.7	2.9	2.5	2.7
='Call on Opec11' & inventory	**29.5**	**28.8**	**26.8**	29.2	29.0	28.7	28.4	30.0	29.3	**28.1**	**29.0**
Less actual / Est. Opec-11	28.9	29.4	26.8	27.9	27.5	27.0	27.5	28.4	28.5	27.5	27.9
Implied inventory change	-0.7	0.6	0.0	-1.3	-1.5	-1.6	-0.9	-1.7	-0.8	-0.7	-1.2
Reported inventory surplus to 5yr norm (mbls)*	+21	+145	+84	+72	+47					+47	
Stocks demand cover (days)	52.5	58.1	58.1	58.8	57.1	57.1	57.1	57.1	57.1	57.1	51.7

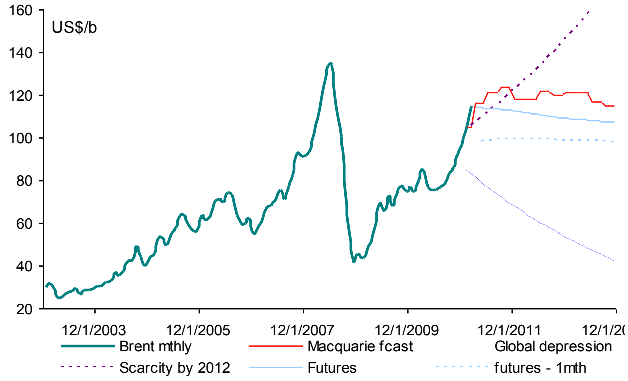
*Includes 'Independent' storage

Source: Macquarie Capital (USA), March 2011

We just recently published much of our thinking about the root issues at hand here, which are Libya's civil war, the Jasmine revolt in Tunisia, the changing of the guard in Egypt and the suddenly terribly relevant factors that inherently make many Middle Eastern and north African regime unstable - see *Global oil fundamentals: Putting a context around MENA crises*, 10 March 2011.

We don't yet see much downside risk to our projection of 2.5% oil demand growth this year. Our macro team agrees that it takes time for higher oil prices to slow down activity. So for now, we think that the recovery cycle continues to accelerate growth in North America, that things could slow down some across Europe's periphery but that at its core Germany's economy continues to boom, and that across emerging markets select economies, including China, are slowing down growth, but continue to expand, even in our new higher oil price environment

Fig 2 Our oil price forecast in context (historical and the absurd range of uncertainty)



Source: Bloomberg, Macquarie Capital (USA), March 2011

Our new deck is most different for 2011

Fig 3 Our new oil price forecast deck, compared with the old and futures and "consensus" as well

Brent	**Q410A**	**2010A**	**Q111E**	**Q211E**	**Q311E**	**Q411E**	**2011E**	**2012E**	**2013E**	**Long Run**
New US$	**87.45**	**80.32**	**105.00**	**116.00**	**121.00**	**124.00**	**117.00**	**120.00**	**119.00**	**88.00**
Old			92.00	106.00	96.50	94.00	97.00	115.50	120.00	88.00
Chg			13.00	10.00	24.50	30.00	20.00	4.50	-1.00	0.00
Chg %			14%	9%	25%	32%	21%	4%	-1%	0%
Futures				114.08	113.65	113.07	112.87	109.27	107.31	
WTI	**Q410A**	**2010A**	**Q111E**	**Q211E**	**Q311E**	**Q411E**	**2011E**	**2012E**	**2013E**	**Long Run**
New US$	**85.31**	**79.58**	**94.00**	**112.00**	**118.00**	**114.00**	**110.00**	**115.00**	**117.00**	**90.00**
Old			90.00	104.00	94.50	92.00	95.00	113.50	119.00	90.00
Chg			4.00	8.00	23.50	22.00	15.00	1.50	-2.00	0.00
Chg %			4%	8%	25%	24%	16%	1%	-2%	0%
Consensus			86.65	86.98	89.09	91.57	87.53	93.98	97.65	
Tapis	**Q410A**	**2010A**	**Q111E**	**Q211E**	**Q311E**	**Q411E**	**2011E**	**2012E**	**2013E**	**Long Run**
New US$	**92.31**	**83.83**	**108.50**	**120.00**	**125.00**	**128.00**	**120.50**	**123.50**	**122.50**	**92.00**
Old			96.00	110.00	100.50	98.00	101.00	119.50	124.00	92.00
Chg			12.50	10.00	24.50	30.00	19.50	4.00	-1.50	0.00
Chg %			13%	9%	24%	31%	19%	3%	-1%	0%
Dubai	**Q410A**	**2010A**	**Q111E**	**Q211E**	**Q311E**	**Q411E**	**2011E**	**2012E**	**2013E**	**Long Run**
New US$	**84.56**	**78.12**	**101.00**	**112.00**	**117.00**	**120.00**	**113.00**	**115.00**	**114.00**	**86.00**
Old			89.50	103.50	94.00	91.50	94.50	113.00	117.50	86.00
Chg			11.50	8.50	23.00	28.50	18.50	2.00	-3.50	0.00
Chg %			13%	8%	24%	31%	20%	2%	-3%	0%

Source: Bloomberg, Macquarie Capital (USA), March 2011

Our Asian view:

Libya: In the eye of the storm

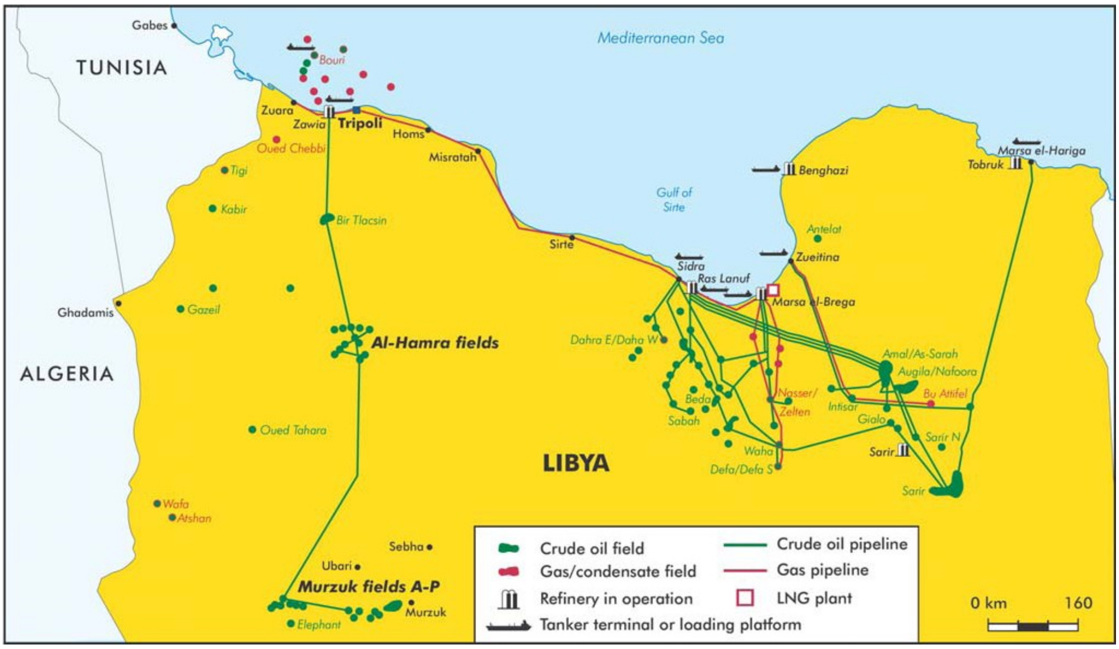
Escalating violence in Libya has introduced a critical new dimension into the rapidly developing series of regime-shaking events roiling the North African (and Middle Eastern) political landscape. Three foreign oil companies have publicly acknowledged that they have pulled their personnel out of Libya. Industry sources like IEA say that other companies too have anonymously acknowledged they were in the process of doing the same. (Nearly all of Libya's production is foreign-operated.) In addition, reports of port closures are multiplying. Meanwhile, the apparent use of force by the army and air force against civilians suggests that the military will not emerge as a potential power broker. Indeed, we think that if the Qaddafi regime were to fall, it could create a vacuum in what is at root still a tribal society with few civic institutions.

Fig 4 Supplies in Libya being constrained/shut down

	Area/Field	kpbd
Arabian Gulf Oil Company	Nafoora	40
Wintershall (Germany)		>100 kbpd
Repsol	El-Sharara	200
ENI		~120
OMV		some of its 35kbpd capacity
Total		some of its 55kbpd production

Source: FACTS, Macquarie Research, March 2011

Fig 5 Map of Libyan oil infrastructure



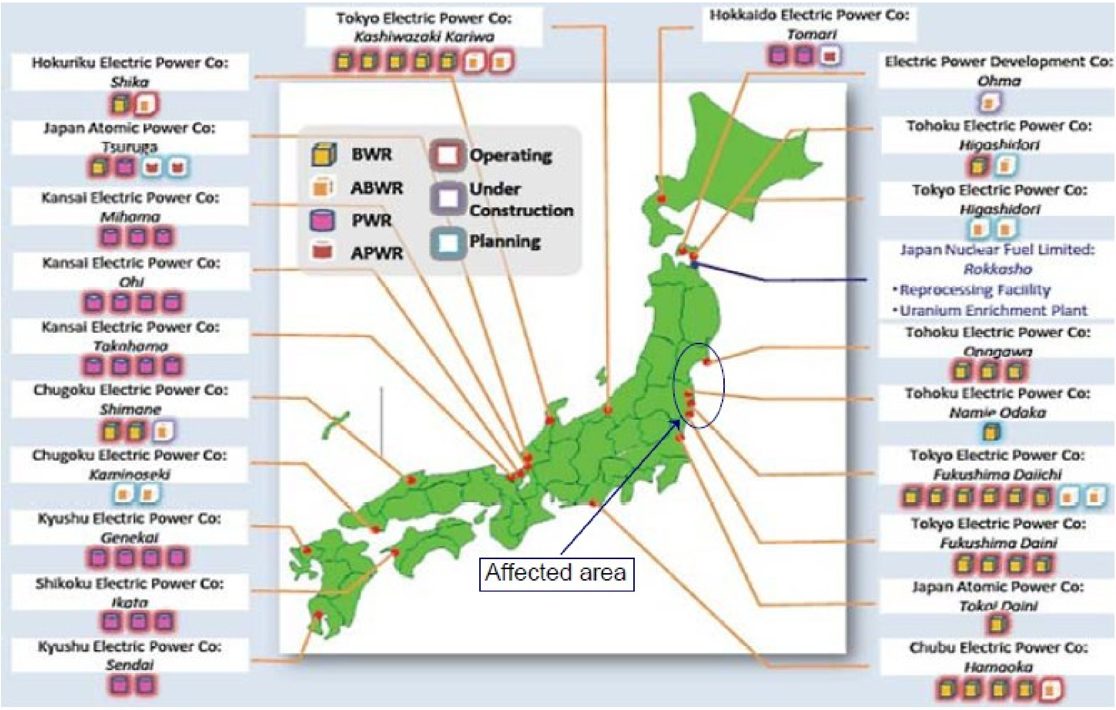
Source: IEA, Macquarie Research, March 2011

Japan's affected Nuclear facilities:

Four nuclear sites have been affected. Fukushima Daiichi (six reactors, 4.5 GW of capacity) and Fukushima Daini (four reactors, 4.3 GW of capacity) are operated by Tokyo Electric (TEPCO), and Onagawa (three reactors, 2.1 GW of capacity) is operated by Tohoku Electric. Japan Atomic Power Company's Tokai reactor (1.1 GW of capacity) also experienced an automatic shutdown.

Our Global oil analyst Jason Gammel expects that all of the 10.9 GW of nuclear power generation affected (about 23% of Japan's total nuclear capacity and 4% of its total electrical generating capacity) would be made up through thermal sources. We expect that LNG and oil products will need to fill the void. This would equate to about 0.24mbpdoe of incremental demand, equivalent to 11 mmtpa of LNG. This equates to about 5% of worldwide LNG demand.

Fig 6 Map of Nuclear power plants in Japan



Source: IEA, Macquarie Research, March 2011

Asia (ex-Middle East/Russia) houses 3 of the world's top 4 oil guzzlers, hence…

China, Japan and India are the #2, #3 and #4 in global oil consumption, and while Japan's demand for oil is declining, it is more than offset by the growth engines of the other two. Overall, Asia (ex-Middle East/Russia) consumes 30% of the world's oil, and its thirst is growing at a 5 year CAGR of 1.4%.

Fig 7 Asia (ex-Mid East/Russia) and its primary crude demand drivers

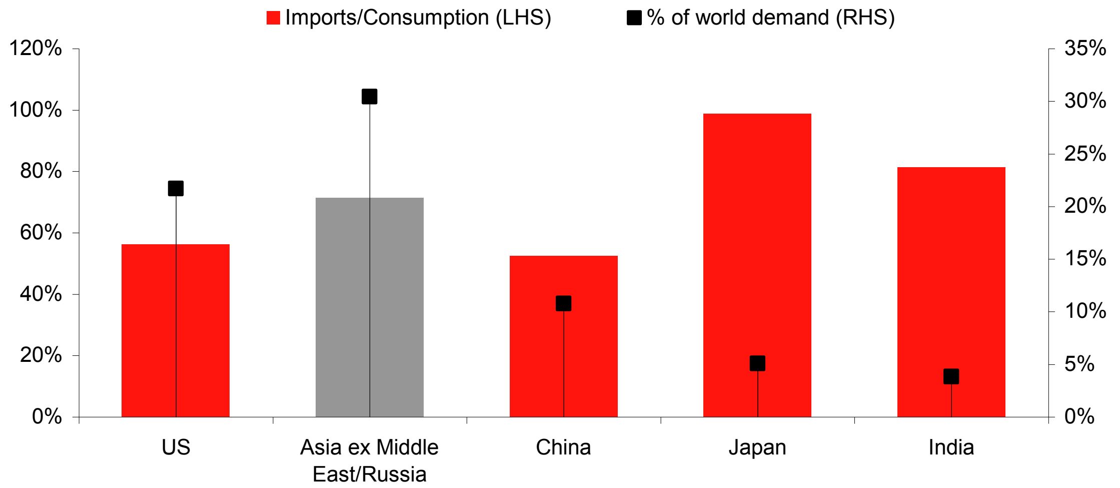
MMT	Consumption	Net imports	5 yr demand CAGR (%)
Global	3,882	NA	0.3%
US	843	473	-2.3%
Asia ex Middle East/Russia	**1,182**	**843**	**1.4%**
China	419	219	4.6%
Japan	198	195	-3.9%
India	149	121	4.3%

Source: BP stats, Macquarie Research, January 2011

….High import bill to increase further

Asia (ex-Middle East/Russia) imports 71% of its crude requirements, since its top 3 consumers have demand which outstrips supply by a mile (see Fig 8). Hence, an increase in crude prices affects these countries to the extent of increasing their import bill significantly.

Fig 8 30% of global demand comes from Asia (ex-Mid East/Russia), which imports 71% of its requirements….



Source: BP Stats, Macquarie Research, January 2011

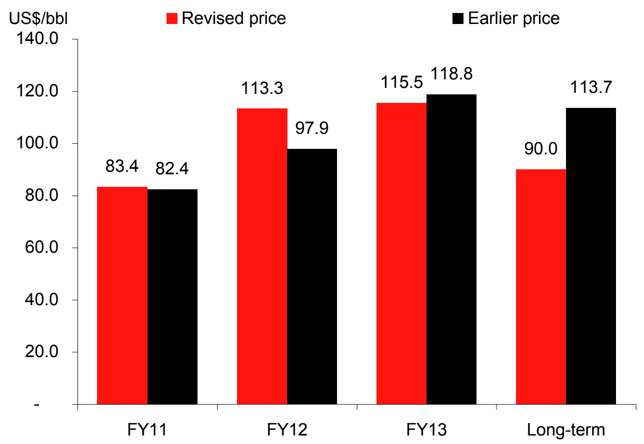
Subsidies complicate the issue, especially in India:

The situation is complicated in China and India, where subsidies do exist, and the increase in crude prices is not passed on to consumers totally, thus distorting the demand-supply dynamics of the market as well as creating an artificial subsidy pool which the government and crude producing public-sector units need to fill up.

However, since China's upstream regulator NDRC has indicated that it would pass on prices to consumers in the band of US$ 80-130/bbl, it is primarily India which faces the brunt of increased subsidies.

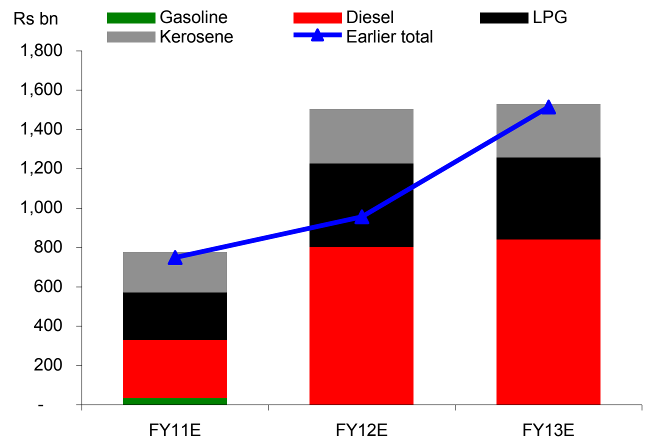
Subsidies in India: Gross subsidy estimates for FY12 jump to US$33bn (+57%), up ~100% YoY, implying that the government would have to substantially increase support, and/or increase fuel prices dramatically. The government has under-budgeted for subsidies for next year in the recent union budget, which could be an indicator of a potential sharp rise in prices/deregulation of diesel as and when this is politically tenable (considering the elections, and the inflation situation).

Fig 9 Large upgrades to FY12 crude price…



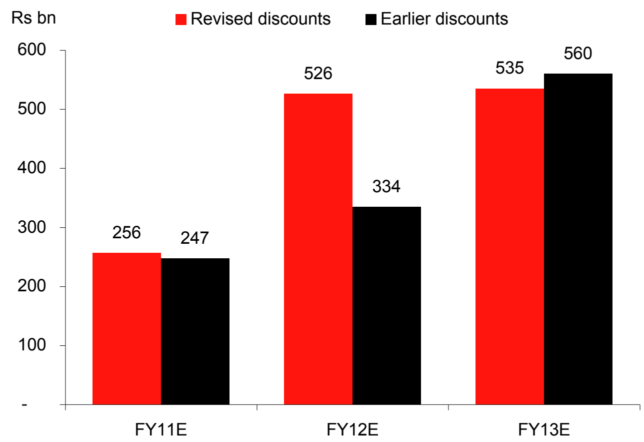
Source: Macquarie Research, January 2011

Fig 10 …result in under-recovery estimates booming



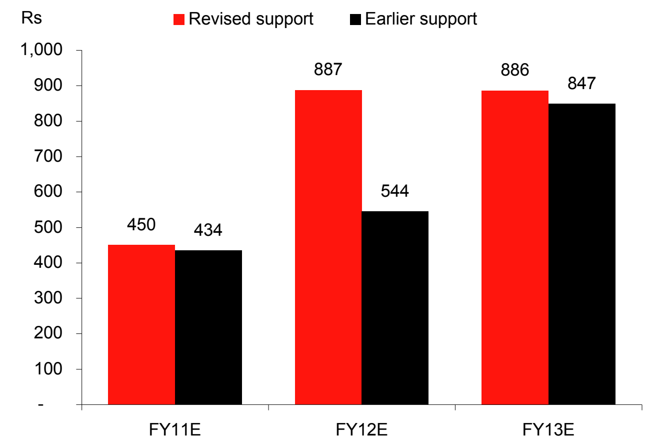
Source: Macquarie Research, January 2011

Fig 11 Upstream discounts to partially offset but….



Source: Macquarie Research, January 2011

Fig 12 ...GoI support needs to increase substantially

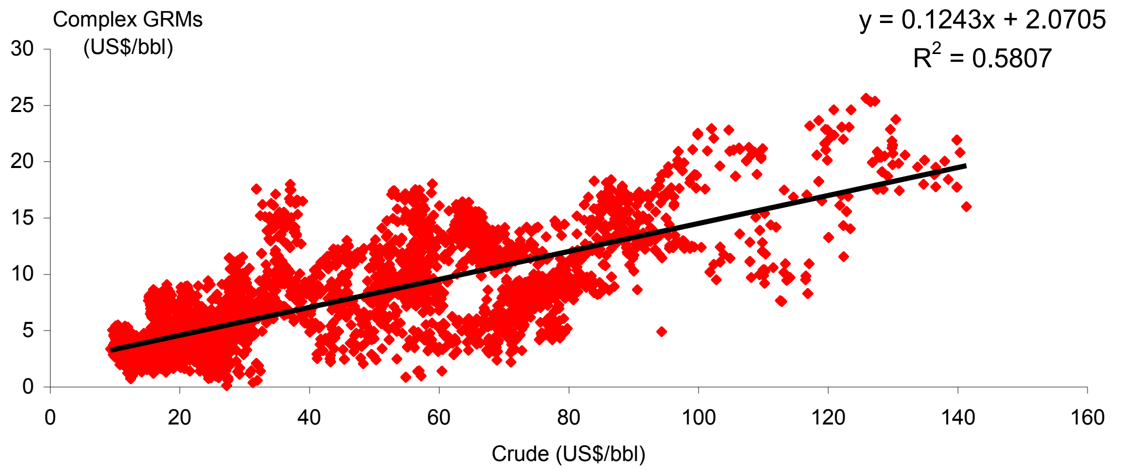


Source: Macquarie Research, January 2011

GRMs have a positive correlation with crude prices in the long-run

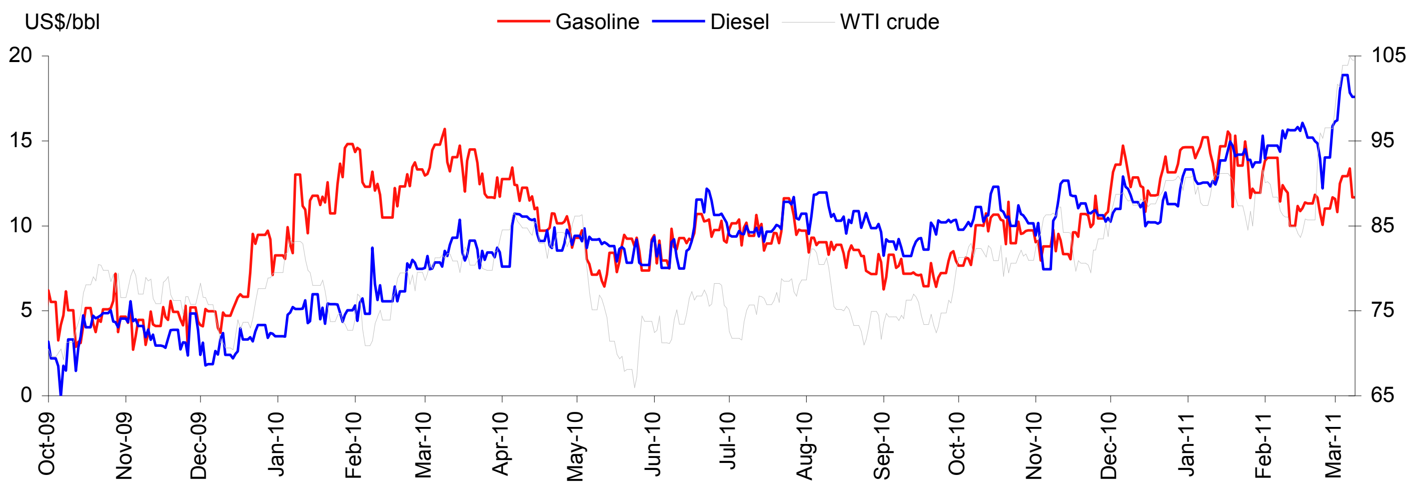
While refiners may feel the pinch in the short-term due to increased working capital requirements on account of high oil prices, in the long run they largely benefit because the demand pull/supply concerns for crude (the prime reason for a sustained rise) are felt through the higher demand/lower inventory for products (primarily auto-fuels, gasoline and diesel). Indian complex GRMs (equivalent to RIL's refinery) are positively correlated by ~60% with crude prices.

Fig 13 GRMs vs crude: long-term correlation is high (~60%)



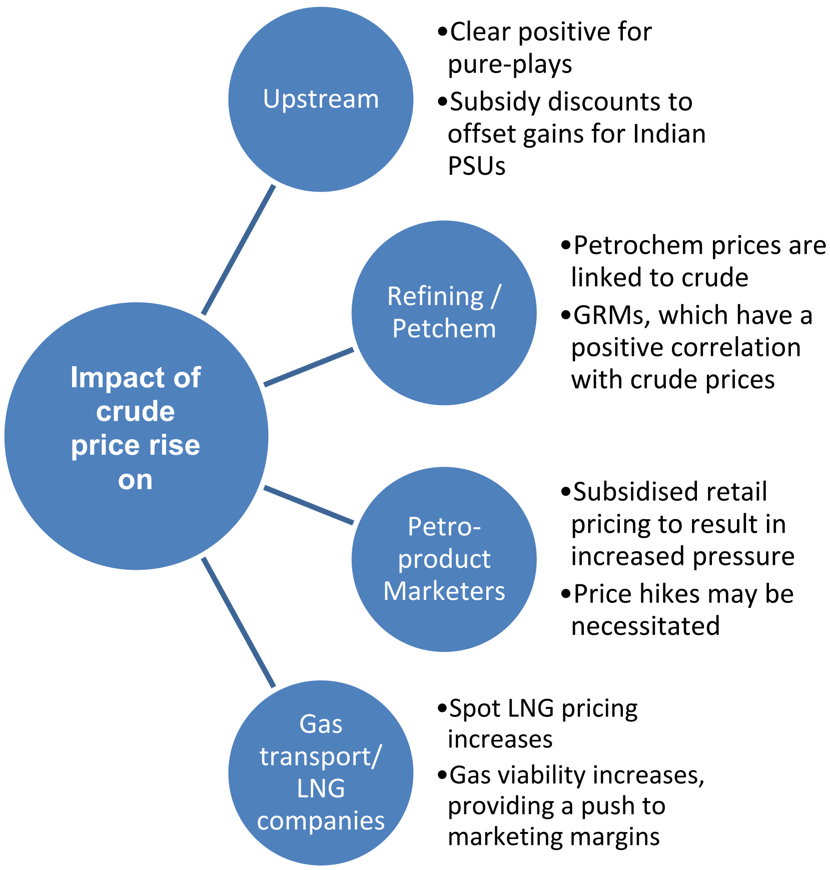
Source: Bloomberg, Macquarie Research, March 2011

Fig 14 Gasoline and Diesel crack spreads have been rising in tandem with crude, increasing GRMs



Source: Bloomberg, Macquarie Research, March 2011

Fig 15 Sub-sectoral impacts of rise in crude prices



Source: Macquarie Research, March 2011

Fig 16 Summary of Impact of crude price increase on coverage universe of Asian oil stocks

						Approximate business mix				Impact of change			TP Sensitivity (%)
Company	*Reco*	*Currency*	*New TP*	*CMP*	*Upside (%)*	*Upstream*	*Refining*	*Petchem*	*Others*	*on earnings (%)*	*on TP (%)*	*Reason*	*US$10/bbl increase in long-term price*
INDIA													
Cairn India (CAIR IN)	UP	INR	304	341	-11%	100%	0%	0%	0%	FY11: +4.4% FY12: +7.1% FY13: -0.9%	+ 4.2%	One of the few pure-play crude oil producers in Asia. Key gainer of oil price hike.	13%
GAIL (GAIL IN)	OP	INR	573	442	30%	1%	0%	35%	64%	FY11: +1.5% FY12: +0.7% FY13: +0.2%	+ 0.1%	Crude price rise will increase petchem product prices. Fixed price of primary input, gas will enhance margins.	2%
ONGC (ONGC IN)	UP	INR	294	281	5%	95%	5%	0%	0%	FY11: +3.3% FY12: +0.5% FY13: +0.3%	+ 0.0%	Positive impact of crude price increase is almost totally offset by increased subsidy discounts	< 1%
Oil India (OINL IN)	OP	INR	1,712	1,271	35%	94%	6%	0%	0%	FY11: +0.8% FY12: +1.0% FY13: -0.6%	+ 0.1%	Positive impact of crude price increase is almost totally offset by increased subsidy discounts	< 1%
RIL (RIL IN)	OP	INR	1,247	992	26%	23%	33%	30%	14%	FY11: +0.5% FY12: +3.1% FY13: -1.0%	+ 0.2%	Minor positive for the small production of crude	< 1%
IOCL (IOCL IN)	OP	INR	416	305	36%	0%	90%	8%	2%	FY11: -1.1% FY12: -1.0% FY13: +1.3%	+ 0.0%	Pass through for refining ,Marketing under-recoveries will increase, but net burden expected to be maintained largely	NM
BPCL (BPCL IN)	OP	INR	786	547	44%	0%	90%	8%	2%	FY11: +0.9% FY12: -0.7% FY13: 2.6%	-0.3%	Pass through for refining; Marketing under-recoveries will increase, but net burden expected to be maintained largely	NM
HPCL (HPCL IN)	OP	INR	449	321	40%	0%	90%	8%	2%	FY11: +0.8% FY12: -1.3% FY13: 2.7%	-1.2%	Pass through for refining; Marketing under-recoveries will increase, but net burden expected to be maintained largely	NM
Petronet LNG (PLNG IN)	UP	INR	101	117	-14%	0%	0%	0%	100%	NA	NA	No impact	NM
Aban Offshore (ABAN IN)	OP	INR	761	598	27%	0%	0%	0%	100%	NA	NA	Indirect positive impact on rig rates, which we have already accounted for	NM

Source: Company data, Macquarie Research, March 2011 Prices as of 11 March, 2011

Fig 17 Summary of Impact of crude price increase on coverage universe of Asian oil stocks

						Approximate business mix				Impact of change			TP sensitivity (%)
Company	*Reco*	*Currency*	*New TP*	*CMP*	*Upside (%)*	*Upstream*	*Refining*	*Petchem*	*Others*	*on earnings (%)*	*on TP (%)*	*Reason*	*US$5/bbl increase in Long-term price*
CHINA													
CNOOC (883 HK)	N	HKD	17.00	17.7	-4%	100%	0%	0%	0%	FY11: +21% FY12: 0% FY13: -2%	+ 6%	Pure upstream player, most oil levered	14%
PetroChina (857 HK)	OP	HKD	14.50	10.8	35%	81%	9%	3%	7%	FY11: +16% FY12: 0% FY13: -2%	+ 2%	We assume oil prices pass through with modest squeeze on refining margins	10%
Sinopec (386 HK)	N	HKD	7.75	7.7	1%	50%	40%	13%	-2%	FY11: +8% FY12: 0% FY13: -2%	+ 3%	We assume oil prices pass through with modest squeeze on refining margins	5%
COSL (2883 HK)	N	HKD	17.25	15.5	11%	0%	0%	0%	100%	FY11: 0% FY12: 0% FY13: 0%	0%		NM
JAPAN													
JX Holdings (5020-JP)	OP	JPY	700	501	40%	20%	40%	2%	38%	FY11: +5.6% FY12: +8.2% FY13: -6.9%	0.0%	The largest oil refiner in Japan; We included 15% lower refining product volume assumptions for 4Q FY3/11 and 1Q Fy3/12 on the back of earthquake damages to plants; We have also assumed Y40bn extraordinary loss due to the damage to be taken in FY3/11.	2.3% (Ex-Inventory) and 11.5% (Inventory)
Inpex (1605-JP)	OP	JPY	640000	525,000	22%	100%	0%	0%	0%	FY11: 0% FY12: 27.4% FY13: 1%	0%	Pure upstream oil and gas producer; Higher oil price has direct positive impact on bottom line; each US$1/bbl increase in oil prx adds roughly Y2.1bn to net profit; This time US$20/bbl higher price leads to as much as 27% increase in EPS; mostly no change for FY3/11 and FY3/13	10%
Japex (1662 JP)	OP	JPY	3900	3,440	13%	100%	0%	0%	0%	FY11: 0% FY12: 26% FY13: 0.6%	0%	Pure upstream oil and gas producer; The largest item in the balance sheet is 7.5% stake in Inpex (1605, OP), therefore the shares of the two companies tend to move together; Upward revision mostly to FY3/12 EPS on the back of higher oil price assumption	10%

Source: Company data, Macquarie Research, March 2011 Prices as of 11 March, 2011

Fig 18 Summary of Impact of crude price increase on coverage universe of Asian oil stocks

						Approximate business mix				Impact of change			Sensitivity of TP (%)
Company	*Reco*	*Currency*	*New TP*	*CMP*	*Upside (%)*	*Upstream*	*Refining*	*Petchem*	*Others*	*on earnings (%)*	*on TP (%)*	*Reason*	*US$5/bbl increase in Long-term price*
KOREA													
SK Innovation (096770 KS)	OP	KRW	under review	186,000	NM	2%	69%	28%	1%	FY11: +7.4% FY12: +0.3% FY13: -1.0%		TP under review	NA
S-Oil (010950 KS)	OP	KRW	under review	124,000	NM	0%	82%	11%	6%	no change		No exposure to E&P	NA
GS Holdings (078930 KS)	OP	KRW	under review	88,000	NM	0%	84%	13%	3%	no change		No exposure to E&P	NA
THAILAND													
PTT Exploration and Production (PTTEP BK)	OP	THB	240	181	33%	100%	0%	0%	0%	FY11: +20% FY12: +5% FY13: -1%	9.0%	70% floating gas and 30% oil	9%
TAIWAN													
Formosa Petrochem (6505 TT)	UP	TWD	81.0	87.6	-8%	0%	65%	30%	5%	NA	NA	Benefits more directly from refining margin enhancements	

Source: Company data, Macquarie Research, March 2011 Prices as of 11 March, 2011

HONG KONG

Oil forecast change

Implications for China oil & gas space

Our global oil economist, Jan Stuart, adjusted the WTI oil price forecast to US$ 110/115/117 for the year 2011/2012/2013, respectively. Compared to old estimates, we changed our numbers by US$ +15/+1.5/-2 correspondingly.

Looking ahead, while we know no better than anyone else what political landscape will emerge across the Middle East and North Africa (MENA), we do know that fundamental change is underway, even in countries that seemed immune to mounting pressure for change from large segments of their fast growing, young and increasingly frustrated populations.

Framing issues and sensitivities

- Without any further disruption, global crude oil markets should tighten from April onward. Refiner crude oil demand peaks in July-September. The peak to trough increase in refiner oil demand is 4m barrels per day.
- Oil markets should remain much more volatile than they have been since early 2009. Amidst real fundamental uncertainty, both speculators and commercial actors are likely continue to run with headlines -- about events in MENA; about economic impacts of high oil prices; about consumer government actions; etc.

Stuff of future headlines

- Look out for news of a shake up of the Saudi government. In Bahrain, watch what's next for the most precariously balanced royal house. Also question who is in charge in Yemen
- Consumer reactions to high and rising oil prices may involve: interest rate hikes, fuel tax cuts, and other macro adjustments, and strategic stock releases and the odd spurt of panic buying as well.

Stock implications

- **CNOOC (883HK)** - EPS estimates are adjusted by +21%/0%/-2% in 2011/2012/2013, respectively. Following our oil price forecast change, we upgraded CNOOC's rating to Neutral with new TP of HK$17.00.
- **PetroChina (857HK) -**EPS estimates are adjusted by +16%/0%/-2% in 2011/2012/2013, respectively. We slightly lifted TP to HK$14.50.
- **Sinopec (386HK) -** EPS estimates are adjusted by +8%/0%/-2% in 2011/2012/2013, respectively. We slightly lifted TP to HK$7.75.

Investment highlights

- **Short-term:** Our order of preference is CNOOC>PetroChina>Sinopec. As a pure upstream player, CNOOC is the biggest beneficiary of crude oil price surging. We believe geopolitical instability in Middle East will have a positive impact on CNOOC's share price.
- **Medium/Long-term:** Our favourites are: PetroChina/COSL(2883HK)/Anton Oilfield(3337HK) with strong fundamentals and a series of positive catalysts. We strongly recommend investors to accumulate.

Inside

Actual & forecast futures prices

	Brent		WTI	
US$/b	New Forecast	Change	New Forecast	Change
Q410A	87.45		85.31	
2010A	**80.32**		**79.58**	
Q111E	105.00	13.00	94.00	4.00
Q211E	116.00	10.00	112.00	8.00
Q311E	121.00	24.50	118.00	23.50
Q411E	124.00	30.00	114.00	22.00
2011E	**117.00**	**20.00**	**110.00**	**15.00**
2012E	**120.00**	**4.50**	**115.00**	**1.50**
2013E	**119.00**	**-1.00**	**117.00**	**-2.00**
Long Run	**88.00**		**90.00**	

Source: Bloomberg, Macquarie Research, March 2011

Bonan Li
+852 3922 3592 bonan.li@macquarie.com
Andrew Dale
+852 3922 3587 andrew.dale@macquarie.com
Adam Worthington
+852 3922 4626 adam.worthington@macquarie.com

14 March 2011

Implications for China oil & gas space

Our global oil economist, Jan Stuart, adjusted oil price forecast to US$ 110/115/117 for the year 2011/2012/2013, respectively. Compared to old estimates, we changed our numbers by US$ +15/+1.5/-2 correspondingly.

Looking ahead, while we know no better than anyone else what political landscape will emerge across the Middle East and North Africa (MENA), we do know that fundamental change is underway, even in countries that seemed immune to mounting pressure for change from large segments of their fast growing, young and increasingly frustrated populations.

Driving prices up

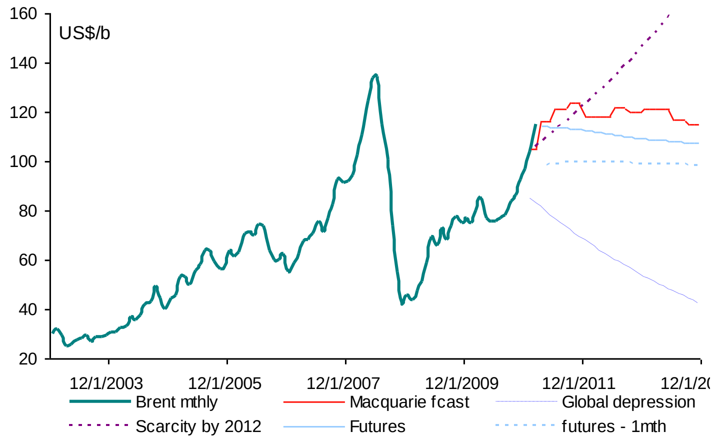
- Obviously the very real and significant supply interruption involving Libya's civil war tightens the global supply demand equation. It effectively takes spare capacity down to 3m barrels a day about one year earlier than we projected two months ago.
- As this year unfolds, simple seasonal trends should take global refiner crude oil demand from its current lows to a seasonal plateau that normally stretches from July through early September and is about 4m barrels a day higher.
- A better gasoline season than last year and still building middle distillate strength help support that plateau and keep pressure on oil markets through year's end.
- In our new base case Opec has less spare capacity and will no longer want to moderate prices aggressively in 2H – which had been our prior assumption.
- And lastly, with risk this high the appetite to sell will be less and limits downside

Supply cut, and risk, add to strength

In this note we focus tightly only on our price forecast. We just recently published much of our thinking about the root issues at hand here, which are Libya's civil war, the Jasmine revolt in Tunisia, the changing of the guard in Egypt and the suddenly terribly relevant factors that inherently make many middle eastern and north African regime unstable, see *Global oil fundamentals: Putting a context around MENA crises*, 10 March 2011.

Shortly we will publish in more detail the latest shifts and turns of global oil supply and demand incorporating new data on end February inventories and January/December revision due from the International Energy Agency tomorrow.

Fig 1 Our oil price forecast in context (historical and the absurd range of uncertainty)



Source: Bloomberg, Macquarie Research, March 2011

Our new deck is most different for 2011

Fig 2 Our new oil price forecast deck, compared with the old and futures and "consensus" as well

Brent	**Q410A**	**2010A**	**Q111E**	**Q211E**	**Q311E**	**Q411E**	**2011E**	**2012E**	**2013E**	**Long Run**
New US$	**87.45**	**80.32**	**105.00**	**116.00**	**121.00**	**124.00**	**117.00**	**120.00**	**119.00**	**88.00**
Old			92.00	106.00	96.50	94.00	97.00	115.50	120.00	88.00
Chg			13.00	10.00	24.50	30.00	20.00	4.50	-1.00	0.00
Chg %			14%	9%	25%	32%	21%	4%	-1%	0%
Futures				114.08	113.65	113.07	112.87	109.27	107.31	
WTI	**Q410A**	**2010A**	**Q111E**	**Q211E**	**Q311E**	**Q411E**	**2011E**	**2012E**	**2013E**	**Long Run**
New US$	**85.31**	**79.58**	**94.00**	**112.00**	**118.00**	**114.00**	**110.00**	**115.00**	**117.00**	**90.00**
Old			90.00	104.00	94.50	92.00	95.00	113.50	119.00	90.00
Chg			4.00	8.00	23.50	22.00	15.00	1.50	-2.00	0.00
Chg %			4%	8%	25%	24%	16%	1%	-2%	0%
Consensus			86.65	86.98	89.09	91.57	87.53	93.98	97.65	
Tapis	**Q410A**	**2010A**	**Q111E**	**Q211E**	**Q311E**	**Q411E**	**2011E**	**2012E**	**2013E**	**Long Run**
New US$	**92.31**	**83.83**	**108.50**	**120.00**	**125.00**	**128.00**	**120.50**	**123.50**	**122.50**	**92.00**
Old			96.00	110.00	100.50	98.00	101.00	119.50	124.00	92.00
Chg			12.50	10.00	24.50	30.00	19.50	4.00	-1.50	0.00
Chg %			13%	9%	24%	31%	19%	3%	-1%	0%
Dubai	**Q410A**	**2010A**	**Q111E**	**Q211E**	**Q311E**	**Q411E**	**2011E**	**2012E**	**2013E**	**Long Run**
New US$	**84.56**	**78.12**	**101.00**	**112.00**	**117.00**	**120.00**	**113.00**	**115.00**	**114.00**	**86.00**
Old			89.50	103.50	94.00	91.50	94.50	113.00	117.50	86.00
Chg			11.50	8.50	23.00	28.50	18.50	2.00	-3.50	0.00
Chg %			13%	8%	24%	31%	20%	2%	-3%	0%

Source: Bloomberg, Macquarie Research, March 2011

Framing issues and sensitivities

- Without any further disruption, global crude oil markets should tighten from April onward. Refiner crude oil demand peaks in July-September. The peak to trough increase in refiner oil demand is 4m barrels per day.
- Oil markets should remain much more volatile than they have been since early 2009. Amidst real fundamental uncertainty, both speculators and commercial actors are likely continue to run with headlines -- about events in MENA; about economic impacts of high oil prices; about consumer government actions; etc.

Stuff of future headlines

- Look out for news of a shake up of the Saudi government. In Bahrain watch what's next for the most precariously balanced royal house. Also question who is in charge in Yemen
- Consumer reactions to high and rising oil prices may involve: interest rate hikes, fuel tax cuts, and other macro adjustments, and strategic stock releases and the odd spurt of panic buying as well.

Stock implications

- **CNOOC (883HK)** - EPS estimates are adjusted by +21%/0%/-2% in 2011/2012/2013, respectively. Following our oil price forecast change, we upgraded CNOOC's rating to Neutral with new TP of HK$17.00.

Fig 3 EPS and TP Changes

CNOOC (Rmb/share)	2011E	2012E	2013E	CNOOC, N	
New EPS	1.60	1.38	1.46	New TP	17.00
Old EPS	1.32	1.37	1.50	Old TP	16.00
Change	0.28	0.01	-0.03	Change	1.00
Chg %	**21%**	**0%**	**-2%**	**Chg %**	**6%**

Source: Macquarie Research, March 2011

- **PetroChina (857HK) -**EPS estimates are adjusted by +16%/0%/-2% in 2011/2012/2013, respectively. We slightly lifted TP to HK$14.50.

Fig 4 EPS and TP Changes

PetroChina (Rmb/share)	2011E	2012E	2013E	PetroChina, OP	
New EPS	1.09	1.14	1.27	New TP	14.50
Old EPS	0.93	1.14	1.29	Old TP	14.25
Change	0.15	0.00	-0.02	Change	0.25
Chg %	**16%**	**0%**	**-2%**	**Chg %**	**2%**

Source: Macquarie Research, March 2011

- **Sinopec (386HK) -** EPS estimates are adjusted by +8%/0%/-2% in 2011/2012/2013, respectively. We slightly lifted TP to HK$7.75.

Fig 5 EPS and TP Changes

Sinopec (Rmb/share)	2011E	2012E	2013E	Sinopec, N	
New EPS	1.01	1.02	1.00	New TP	7.75
Old EPS	0.94	1.02	1.01	Old TP	7.50
Change	0.07	0.00	-0.02	Change	0.25
Chg %	**8%**	**0%**	**-2%**	**Chg %**	**3%**

Source: Macquarie Research, March 2011

Investment highlights

- **Short-term**- Our order of preference is CNOOC>PetroChina>Sinopec.

  As a pure upstream player, CNOOC is the biggest beneficiary of crude oil price surging. 1% WTI oil price increase will lead to 1.3% EPS upgrade in FY11. We believe geopolitical instability in Middle East will have a positive impact on CNOOC's share price.

  PetroChina is also heavily oil levered and we believe the share price should also positively react to crude price surging and Middle East unrest. 1% WTI oil price increase will lead to 1% EPS upgrade in FY11.

  Sinopec is the least sensitive to oil price changes due to its business mix. 1% WTI oil price increase will lead to 0.5% EPS upgrade in FY11. We believe its share price will react more significantly to NDRC's fuel price adjustment rather than international crude price change.

- **Medium/Long-term-** Our favourites are: PetroChina/COSL(2883HK)/Anton Oilfield(3337HK) with strong fundamentals and a series of positive catalysts.

  PetroChina is our long-term favourite due to its dominant natural gas business, strong upstream reserves, as well as supportive policies through the 12th 5-yr plan.

  COSL is the key beneficiary of CNOOC's aggressive offshore capex spending. China is expected to double offshore oil & gas production in next 5 years, providing significant catalysts for the stock.

  Anton Oilfield is China's leading onshore oil & gas field service company. Since our initiation, share price has surged ~80% vs. 14% increase of HIS during the same period. Management guided FY10 revenue will amount to ~Rmb1 billion, and is expecting net profit to hit the historical high. Currently the stock is traded at 14x FY11 PER and we see large upside risk to the share price.

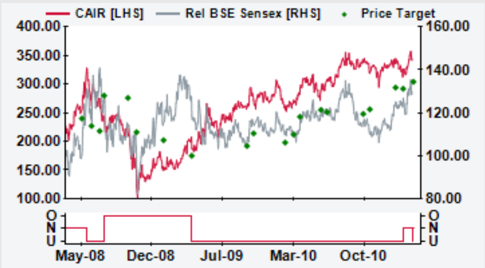
INDIA

CAIR IN		Underperform
Price 11 Mar 11		Rs341.15
12-month target	**Rs**	**304.00**
Upside/Downside	**%**	**-10.9**
Valuation - DCF	**Rs**	**304.00**
GICS sector		**Energy**
Market cap	**Rsm**	**648,694**
30-day avg turnover	**US$m**	**24.8**
Market cap	**US$m**	**14,337**
Number shares on issue	**m**	**1,901**

Investment fundamentals

Year end 31 Mar		2010A	2011E	2012E	2013E
Revenue	bn	16.2	99.7	120.1	116.1
EBIT	bn	6.2	65.7	87.7	85.1
EBIT growth	%	54.4	954.2	33.4	-2.9
Recurring profit	bn	10.2	65.4	90.4	92.2
Reported profit	bn	10.5	57.7	76.8	78.3
Adjusted profit	bn	10.5	57.7	76.8	78.3
EPS rep	Rs	5.54	30.44	40.51	41.31
EPS rep growth	%	54.5	449.4	33.1	2.0
EPS adj	Rs	5.54	30.44	40.51	41.31
EPS adj growth	%	58.5	449.4	33.1	2.0
PER rep	x	61.6	11.2	8.4	8.3
PER adj	x	61.6	11.2	8.4	8.3
Total DPS	Rs	0.00	0.00	12.15	12.39
Total div yield	%	0.0	0.0	3.6	3.6
ROA	%	1.6	15.0	17.8	16.4
ROE	%	3.2	15.7	18.2	16.4
EV/EBITDA	x	84.6	8.7	6.6	6.8
Net debt/equity	%	7.3	-0.2	-8.1	-19.4
P/BV	x	1.9	1.6	1.4	1.3

CAIR IN rel BSE Sensex performance, & rec history



Note: Recommendation timeline - if not a continuous line, then there was no Macquarie coverage at the time or there was an embargo period.

Source: FactSet, Macquarie Research, March 2011

(all figures in INR unless noted)

Jal Irani
+91 22 6653 3040 jal.irani@macquarie.com
Abhishek Agarwal
+91 22 6653 3057
abhishek.agarwal-msg@macquarie.com

14 March 2011

Macquarie Capital Securities India (Pvt) Ltd

Cairn India

Deal or no deal?

Event

- Cairn is the only pure-play crude stock in India, and has gained from the rising crude prices. We raise our earnings estimates for Cairn India by 4-7% and target price by 4% in order to factor-in a 15% increase in WTI crude oil prices. However, we believe that the run-up in stock price more than captures the rise, and is not factoring in uncertainties in future cashflow generation (a function of technical expertise that may be destabilized) and utilization (dependent on control) that may result from the Vedanta deal going through. We downgrade the stock to an Underperform, with a TP of Rs304.

Impact

- **Short-term boost to oil price estimates:** Macquarie's oil economist Jan Stuart has raised his CY11E WTI crude price estimates by ~15% (while more-or-less maintaining the longer term estimates) on the back of the Middle East and North Asia (MENA) crisis affecting crude production, and increasing risks to supply from those petroleum-exporting countries. A devastating Japan earthquake and tsunami has added further bullishness to the non-renewable energy markets, as nuclear power plans in Japan have been shut.
- **Pre-conditions for deal watered down:** According to media statements, the oil ministry has watered down its pre-conditions for allowing the Vedanta takeover of Cairn India. While earlier it was proposing that Cairn withdraw its cess-arbitration and share royalty (currently being paid 100% by ONGC, amongst others); a tough stand by Cairn India / Cairn Plc management and some fruitful meetings between the Prime Minister and the Vedanta group Chairman have resulted in the deal being delayed but not doomed, in our view. It is likely to be reviewed by the Indian Union Cabinet in the near future. As we go to publication, unconfirmed media reports state that the Indian market regulator SEBI has made final observations on the deal.

Earnings and target price revision

- FY11E and FY12E PAT estimates increased by 4% and 7% respectively. TP increased to Rs304 (+4.2%).

Price catalyst

- 12-month price target: Rs304.00 based on a DCF methodology.
- Catalyst: Clarity on Vedanta takeover, and any regulatory pre-conditions

Action and recommendation

- **Downgrade to Underperform.** Cairn India remains relatively expensive on an EV/1P reserves of US$54/bbl (peer mean US$19/bbl) due to its low 1P reserves. Our DCF-based valuation of Rs304/share incorporates its operational excellence of delivering higher than expected volumes from its high 2P+2C resources, at controlled costs. We downgrade Cairn to an Underperform from Neutral following a recent sharp run-up in the stock price.

Cairn India (CAIR IN, Underperform, Target Price: Rs304.00)

Quarterly Results		3Q/11A	4Q/11E	1Q/12E	2Q/12E
Revenue	**bn**	**31.0**	**32.8**	**27.6**	**28.8**
Gross Profit	**bn**	**30.9**	**21.7**	**25.7**	**26.8**
Cost of Goods Sold	bn	0.0	11.0	2.0	2.1
EBITDA	**bn**	**25.4**	**22.9**	**22.8**	**23.8**
Depreciation	bn	2.9	2.1	2.6	2.7
Amortisation of Goodwill	bn	0.0	0.0	0.0	0.0
Other Amortisation	bn	0.0	0.0	0.0	0.0
EBIT	**bn**	**22.5**	**20.8**	**20.2**	**21.1**
Net Interest Income	bn	-0.7	-1.0	-0.8	-0.8
Associates	bn	0.0	0.0	0.0	0.0
Exceptionals	bn	0.0	0.0	0.0	0.0
Forex Gains / Losses	bn	0.0	0.0	0.0	0.0
Other Pre-Tax Income	bn	0.3	2.3	1.4	1.4
Pre-Tax Profit	**bn**	**22.1**	**22.1**	**20.8**	**21.7**
Tax Expense	bn	-2.0	-3.1	-3.1	-3.3
Net Profit	**bn**	**20.1**	**19.0**	**17.7**	**18.4**
Minority Interests	bn	0.0	0.0	0.0	0.0
Reported Earnings	**bn**	**20.1**	**19.0**	**17.7**	**18.4**
Adjusted Earnings	**bn**	**20.1**	**19.0**	**17.7**	**18.4**
EPS (rep)		10.60	10.01	9.32	9.72
EPS (adj)		10.60	10.01	9.32	9.72
EPS Growth yoy (adj)	%	635.5	568.7	528.0	16.3
EBITDA Margin	%	82.1	69.9	82.5	82.5
EBIT Margin	%	72.8	63.4	73.0	73.0
Earnings Split	%	34.8	32.9	23.0	24.0
Revenue Growth	%	633.8	648.1	204.4	7.3
EBIT Growth	%	1,290.9	1,134.2	394.7	14.9

Profit & Loss		2010A	2011E	2012E	2013E
Revenue	**bn**	**16.2**	**99.7**	**120.1**	**116.1**
Gross Profit	**bn**	**14.8**	**88.3**	**111.5**	**105.6**
Cost of Goods Sold	bn	1.4	11.4	8.6	10.5
EBITDA	**bn**	**7.7**	**75.2**	**99.1**	**95.8**
Depreciation	bn	1.5	9.4	11.4	10.7
Amortisation of Goodwill	bn	0.0	0.0	0.0	0.0
Other Amortisation	bn	0.0	0.0	0.0	0.0
EBIT	**bn**	**6.2**	**65.7**	**87.7**	**85.1**
Net Interest Income	bn	-0.1	-3.5	-3.3	-1.3
Associates	bn	0.0	0.0	0.0	0.0
Exceptionals	bn	0.0	0.0	0.0	0.0
Forex Gains / Losses	bn	0.0	0.0	0.0	0.0
Other Pre-Tax Income	bn	4.1	3.2	6.0	8.4
Pre-Tax Profit	**bn**	**10.2**	**65.4**	**90.4**	**92.2**
Tax Expense	bn	0.3	-7.7	-13.6	-13.8
Net Profit	**bn**	**10.5**	**57.7**	**76.8**	**78.3**
Minority Interests	bn	0.0	0.0	0.0	0.0
Reported Earnings	**bn**	**10.5**	**57.7**	**76.8**	**78.3**
Adjusted Earnings	**bn**	**10.5**	**57.7**	**76.8**	**78.3**
EPS (rep)		5.54	30.44	40.51	41.31
EPS (adj)		5.54	30.44	40.51	41.31
EPS Growth (adj)	%	58.5	449.4	33.1	2.0
PE (rep)	x	61.6	11.2	8.4	8.3
PE (adj)	x	61.6	11.2	8.4	8.3
Total DPS		0.00	0.00	12.15	12.39
Total Div Yield	%	0.0	0.0	3.6	3.6
Weighted Average Shares	m	1,897	1,897	1,897	1,897
Period End Shares	m	1,897	1,897	1,897	1,897

Profit and Loss Ratios		2010A	2011E	2012E	2013E
Revenue Growth	%	38.2	514.2	20.5	-3.4
EBITDA Growth	%	23.5	873.6	31.8	-3.3
EBIT Growth	%	54.4	954.2	33.4	-2.9
Gross Profit Margin	%	91.2	88.6	92.9	91.0
EBITDA Margin	%	47.6	75.4	82.5	82.5
EBIT Margin	%	38.4	65.9	73.0	73.3
Net Profit Margin	%	64.8	57.9	64.0	67.5
Payout Ratio	%	0.0	0.0	30.0	30.0
EV/EBITDA	x	84.6	8.7	6.6	6.8
EV/EBIT	x	104.8	9.9	7.4	7.7
Balance Sheet Ratios					
ROE	%	3.2	15.7	18.2	16.4
ROA	%	1.6	15.0	17.8	16.4
ROIC	%	2.1	16.0	18.8	17.5
Net Debt/Equity	%	7.3	-0.2	-8.1	-19.4
Interest Cover	x	42.1	18.7	26.4	64.5
Price/Book	x	1.9	1.6	1.4	1.3
Book Value per Share		178.6	209.0	237.4	266.3

Cashflow Analysis		2010A	2011E	2012E	2013E
EBITDA	**bn**	**7.7**	**75.2**	**99.1**	**95.8**
Tax Paid	bn	0.3	-7.7	-13.6	-13.8
Chgs in Working Cap	bn	0.0	0.0	0.0	0.0
Net Interest Paid	bn	-0.1	-3.5	-3.3	-1.3
Other	bn	0.0	0.0	0.0	0.0
Operating Cashflow	**bn**	**7.9**	**64.0**	**82.2**	**80.7**
Acquisitions	bn	0.0	0.0	0.0	0.0
Capex	bn	-31.5	-31.2	-16.8	-4.5
Asset Sales	bn	0.0	0.0	0.0	0.0
Other	bn	0.0	0.0	0.0	0.0
Investing Cashflow	**bn**	**-31.5**	**-31.2**	**-16.8**	**-4.5**
Dividend (Ordinary)	bn	0.0	0.0	-23.1	-23.5
Equity Raised	bn	0.1	-0.0	-0.0	-0.0
Debt Movements	bn	-9.6	20.0	-25.0	-25.0
Other	bn	0.0	0.0	0.0	0.0
Financing Cashflow	**bn**	**-9.5**	**20.0**	**-48.1**	**-48.5**
Net Chg in Cash/Debt	**bn**	**-40.6**	**45.4**	**10.8**	**36.4**
Free Cashflow	**bn**	**-23.6**	**32.8**	**65.4**	**76.2**

Balance Sheet		2010A	2011E	2012E	2013E
Cash	bn	9.3	54.7	65.4	101.9
Receivables	bn	3.1	8.2	9.9	9.5
Inventories	bn	2.9	20.5	24.7	23.8
Investments	bn	17.1	17.1	17.1	17.1
Fixed Assets	bn	97.9	119.6	125.1	118.9
Intangibles	bn	253.2	253.2	253.2	253.2
Other Assets	bn	8.5	8.5	8.5	8.5
Total Assets	**bn**	**391.9**	**481.8**	**503.8**	**532.9**
Payables	bn	8.7	20.7	14.0	13.3
Short Term Debt	bn	0.0	0.0	0.0	0.0
Long Term Debt	bn	34.0	54.0	29.0	4.0
Provisions	bn	4.9	4.9	4.9	4.9
Other Liabilities	bn	5.7	5.7	5.7	5.7
Total Liabilities	**bn**	**53.3**	**85.3**	**53.6**	**27.9**
Shareholders' Funds	bn	338.7	396.4	450.2	505.1
Minority Interests	bn	0.0	0.0	0.0	0.0
Other	bn	0.0	0.0	0.0	0.0
Total S/H Equity	**bn**	**338.7**	**396.4**	**450.2**	**505.1**
Total Liab & S/H Funds	**bn**	**391.9**	**481.8**	**503.8**	**532.9**

All figures in INR unless noted.
Source: Company data, Macquarie Research, March 2011

Important disclosures:

Recommendation definitions

Macquarie - Australia/New Zealand
Outperform – return >3% in excess of benchmark return
Neutral – return within 3% of benchmark return
Underperform – return >3% below benchmark return

Benchmark return is determined by long term nominal GDP growth plus 12 month forward market dividend yield

Macquarie – Asia/Europe
Outperform – expected return >+10%
Neutral – expected return from -10% to +10%
Underperform – expected return <-10%

Macquarie First South - South Africa
Outperform – expected return >+10%
Neutral – expected return from -10% to +10%
Underperform – expected return <-10%

Macquarie - Canada
Outperform – return >5% in excess of benchmark return
Neutral – return within 5% of benchmark return
Underperform – return >5% below benchmark return

Macquarie - USA
Outperform (Buy) – return >5% in excess of Russell 3000 index return
Neutral (Hold) – return within 5% of Russell 3000 index return
Underperform (Sell)– return >5% below Russell 3000 index return

Volatility index definition*

This is calculated from the volatility of historical price movements.

Very high–highest risk – Stock should be expected to move up or down 60–100% in a year – investors should be aware this stock is highly speculative.

High – stock should be expected to move up or down at least 40–60% in a year – investors should be aware this stock could be speculative.

Medium – stock should be expected to move up or down at least 30–40% in a year.

Low–medium – stock should be expected to move up or down at least 25–30% in a year.

Low – stock should be expected to move up or down at least 15–25% in a year.
* Applicable to Australian/NZ/Canada stocks only

Recommendations – 12 months
Note: Quant recommendations may differ from Fundamental Analyst recommendations

Financial definitions

All "Adjusted" data items have had the following adjustments made:
Added back: goodwill amortisation, provision for catastrophe reserves, IFRS derivatives & hedging, IFRS impairments & IFRS interest expense
Excluded: non recurring items, asset revals, property revals, appraisal value uplift, preference dividends & minority interests

EPS = adjusted net profit / efpowa*
ROA = adjusted ebit / average total assets
ROA Banks/Insurance = adjusted net profit /average total assets
ROE = adjusted net profit / average shareholders funds
Gross cashflow = adjusted net profit + depreciation
*equivalent fully paid ordinary weighted average number of shares

All Reported numbers for Australian/NZ listed stocks are modelled under IFRS (International Financial Reporting Standards).

Recommendation proportions – For quarter ending 31 December 2010

	AU/NZ	Asia	RSA	USA	CA	EUR	
Outperform	46.38%	62.62%	52.17%	44.99%	67.57%	50.90%	(for US coverage by MCUSA, 13.59% of stocks covered are investment banking clients)
Neutral	37.68%	18.58%	34.78%	50.61%	28.83%	35.48%	(for US coverage by MCUSA, 15.22% of stocks covered are investment banking clients)
Underperform	15.94%	18.80%	13.04%	4.40%	3.60%	13.62%	(for US coverage by MCUSA, 0.00% of stocks covered are investment banking clients)

Company Specific Disclosures:

Important disclosure information regarding the subject companies covered in this report is available at www.macquarie.com/disclosures.

Analyst Certification:
The views expressed in this research accurately reflect the personal views of the analyst(s) about the subject securities or issuers and no part of the compensation of the analyst(s) was, is, or will be directly or indirectly related to the inclusion of specific recommendations or views in this research. The analyst principally responsible for the preparation of this research receives compensation based on overall revenues of Macquarie Group Ltd ABN 94 122 169 279 (AFSL No. 318062) (MGL) and its related entities (the Macquarie Group) and has taken reasonable care to achieve and maintain independence and objectivity in making any recommendations.

General Disclaimers:
Macquarie Securities (Australia) Ltd; Macquarie Capital (Europe) Ltd; Macquarie Capital Markets Canada Ltd; Macquarie Capital Markets North America Ltd; Macquarie Capital (USA) Inc; Macquarie Capital Securities Ltd and its Taiwan branch; Macquarie Capital Securities (Singapore) Pte Ltd; Macquarie Securities (NZ) Ltd; Macquarie First South Securities (Pty) Limited; Macquarie Capital Securities (India) Pvt Ltd; Macquarie Capital Securities (Malaysia) Sdn Bhd; Macquarie Securities Korea Limited and Macquarie Securities (Thailand) Ltd are not authorized deposit-taking institutions for the purposes of the Banking Act 1959 (Commonwealth of Australia), and their obligations do not represent deposits or other liabilities of Macquarie Bank Limited ABN 46 008 583 542 (MBL) or MGL. MBL does not guarantee or otherwise provide assurance in respect of the obligations of any of the above mentioned entities. MGL provides a guarantee to the Monetary Authority of Singapore in respect of the obligations and liabilities of Macquarie Capital Securities (Singapore) Pte Ltd for up to SGD 35 million. This research has been prepared for the general use of the wholesale clients of the Macquarie Group and must not be copied, either in whole or in part, or distributed to any other person. If you are not the intended recipient you must not use or disclose the information in this research in any way. If you received it in error, please tell us immediately by return e-mail and delete the document. We do not guarantee the integrity of any e-mails or attached files and are not responsible for any changes made to them by any other person. MGL has established and implemented a conflicts policy at group level (which may be revised and updated from time to time) (the "Conflicts Policy") pursuant to regulatory requirements (including the FSA Rules) which sets out how we must seek to identify and manage all material conflicts of interest. Nothing in this research shall be construed as a solicitation to buy or sell any security or product, or to engage in or refrain from engaging in any transaction. In preparing this research, we did not take into account your investment objectives, financial situation or particular needs. Before making an investment decision on the basis of this research, you need to consider, with or without the assistance of an adviser, whether the advice is appropriate in light of your particular investment needs, objectives and financial circumstances. There are risks involved in securities trading. The price of securities can and does fluctuate, and an individual security may even become valueless. International investors are reminded of the additional risks inherent in international investments, such as currency fluctuations and international stock market or economic conditions, which may adversely affect the value of the investment. This research is based on information obtained from sources believed to be reliable but we do not make any representation or warranty that it is accurate, complete or up to date. We accept no obligation to correct or update the information or opinions in it. Opinions expressed are subject to change without notice. No member of the Macquarie Group accepts any liability whatsoever for any direct, indirect, consequential or other loss arising from any use of this research and/or further communication in relation to this research. Clients should contact analysts at, and execute transactions through, a Macquarie Group entity in their home jurisdiction unless governing law permits otherwise.

Country-Specific Disclaimers:
Australia: In Australia, research is issued and distributed by Macquarie Securities (Australia) Ltd (AFSL No. 238947), a participating organisation of the Australian Securities Exchange. **New Zealand**: In New Zealand, research is issued and distributed by Macquarie Securities (NZ) Ltd, a NZX Firm. **Canada**: In Canada, research is prepared, approved and distributed by Macquarie Capital Markets Canada Ltd, a participating organisation of the Toronto Stock Exchange, TSX Venture Exchange & Montréal Exchange. Macquarie Capital Markets North America Ltd., which is a registered broker-dealer and member of FINRA, accepts responsibility for the contents of reports issued by Macquarie Capital Markets Canada Ltd in the United States and sent to US persons. Any person wishing to effect transactions in the securities described in the reports issued by Macquarie Capital Markets Canada Ltd should do so with Macquarie Capital Markets North America Ltd. The Research Distribution Policy of Macquarie Capital Markets Canada Ltd is to allow all clients that are entitled to have equal access to our research. **United Kingdom**: In the United Kingdom, research is issued and distributed by Macquarie Capital (Europe) Ltd, which is authorised and regulated by the Financial Services Authority (No. 193905). **Germany**: In Germany, research is issued and distributed by Macquarie Capital (Europe) Ltd, Niederlassung Deutschland, which is authorised and regulated in the United Kingdom by the Financial Services Authority (No. 193905). **France**: In France, research is issued and distributed by Macquarie Capital (Europe) Ltd, which is authorised and regulated in the United Kingdom by the Financial Services Authority (No. 193905). **Hong Kong**: In Hong Kong, research is issued and distributed by Macquarie Capital Securities Ltd, which is licensed and regulated by the Securities and Futures Commission. **Japan**: In

Auckland Tel: (649) 377 6433	**Bangkok** Tel: (662) 694 7999	**Calgary** Tel: (1 403) 218 6650	**Denver** Tel: (303) 952 2800	**Frankfurt** Tel: (069) 509 578 000	**Geneva** Tel: (41) 22 818 7777	**Hong Kong** Tel: (852) 2823 3588
Jakarta Tel: (62 21) 515 1818	**Johannesburg** Tel: (2711) 583 2000	**Kuala Lumpur** Tel: (60 3) 2059 8833	**London** Tel: (44 20) 3037 4400	**Manila** Tel: (63 2) 857 0888	**Melbourne** Tel: (613) 9635 8139	**Montreal** Tel: (1 514) 925 2850
Mumbai Tel: (91 22) 6653 3000	**Munich** Tel: (089) 2444 31800	**New York** Tel: (1 212) 231 2500	**Paris** Tel: (33 1) 7842 3823	**Perth** Tel: (618) 9224 0888	**Seoul** Tel: (82 2) 3705 8500	**Shanghai** Tel: (86 21) 6841 3355
Singapore Tel: (65) 6231 1111	**Sydney** Tel: (612) 8232 9555	**Taipei** Tel: (886 2) 2734 7500	**Tokyo** Tel: (81 3) 3512 7900	**Toronto** Tel: (1 416) 848 3500		

Macquarie
Equities Research

MACQUARIE

Asia Research

Head of Equity Research

John O'Connell (Global Co – Head)	(612) 8232 7544
David Rickards (Global Co – Head)	(44 20) 3037 4399
Chris Hunt (Asia – Head)	(852) 3922 1119
Tim Smart (Asia – Deputy Head)	(852) 3922 3565

Automobiles/Auto Parts

Leah Jiang (China)	(8621) 2412 9020
Linda Huang (Hong Kong)	(852) 3922 4068
Clive Wiggins (Japan)	(813) 3512 7856
Dan Lucas (Japan)	(813) 3512 6050
Michael Sohn (Korea)	(82 2) 3705 8644

Banks and Non-Bank Financials

Ismael Pili (Asia, Hong Kong)	(852) 3922 4774
Victor Wang (China)	(852) 3922 1479
Alastair Macdonald (Japan)	(813) 3512 7476
Mudit Painuly (India)	(9122) 6653 3044
Suresh Ganapathy (India)	(9122) 6653 3042
Ferry Wong (Indonesia)	(6221) 515 7335
Chan Hwang (Korea)	(822) 3705 8643
Alex Pomento (Philippines)	(632) 857 0899
Matthew Smith (Malaysia, Singapore)	(65) 6231 2981
Jemmy Huang (Taiwan)	(8862) 2734 7530
Passakorn Linmaneechote (Thailand)	(662) 694 7728
Apichet Kiatworakun (Thailand)	(662) 694 7724

Conglomerates

Leah Jiang (China)	(8621) 2412 9020
Alex Pomento (Philippines)	(632) 857 0899

Consumer and Gaming

Gary Pinge (Asia)	(852) 3922 3557
Linda Huang (Hong Kong)	(852) 3922 4068
Toby Williams (Japan)	(813) 3512 7392
Lyall Taylor (Indonesia)	(6221) 2598 8489
HongSuk Na (Korea)	(822) 3705 8678
Alex Pomento (Philippines)	(632) 857 0899
Amit Mishra (India)	(91) 22 6653 3051
Best Waiyanont (Thailand)	(662) 694 7993

Emerging Leaders

Jake Lynch (China, Asia)	(8621) 2412 9007
Jonathan Hsu (China, Hong Kong)	(852) 3922 4625
Saiyi He (Hong Kong)	(852) 3922 3585
Robert Burghart (Japan)	(813) 3512 7853

Industrials

Inderjeetsingh Bhatia (India)	(9122) 6653 3166
Linda Huang (Hong Kong)	(852) 3922 4068
Janet Lewis (Japan)	(813) 3512 7475
Yuki Soga (Japan)	(813) 3512 7859
Chang Han Joo (Korea)	(822) 3705 8511
Juwon Lee (Korea)	(822) 3705 8661
Sunaina Dhanuka (Malaysia)	(603) 2059 8993
David Gambrill (Thailand)	(662) 694 7753

Insurance

Scott Russell (Asia)	(852) 3922 3567
Chung Jun Yun (Korea)	(822) 2095 7222

Media and Internet

Jiong Shao (China, Hong Kong)	(852) 3922 3566
Steve Zhang (China, Hong Kong)	(852) 3922 3578
Prem Jearajasingam (Malaysia)	(603) 2059 8989
Alex Pomento (Philippines)	(632) 857 0899

Oil, Gas and Petrochemicals

Linda Huang (Hong Kong)	(852) 3922 4068
Jal Irani (India)	(9122) 6653 3040
Polina Diyachkina (Japan)	(813) 3512 7886
Shawn Park (Korea)	(822) 3705 8669
Sunaina Dhanuka (Malaysia)	(603) 2059 8993
Trevor Buchinski (Thailand)	(662) 694 7829

Pharmaceuticals and Healthcare

Jonathan Hsu (Hong Kong)	(852) 3922 4625
Abhishek Singhal (India)	(9122) 6653 3052
Christina Lee (Korea)	(852) 3922 3571

Property

Callum Bramah (Asia)	(852) 3922 4731
Eva Lee (China, Hong Kong)	(852) 3922 3573
Eugene Cheung (Hong Kong)	(852) 3922 4627
Unmesh Sharma (India)	(9122) 6653 3170
Felicia Barus (Indonesia)	(6221) 2598 8480
Hiroshi Okubo (Japan)	(813) 3512 7433
Chang Han Joo (Korea)	(822) 3705 8511
Sunaina Dhanuka (Malaysia)	(603) 2059 8993
Alex Pomento (Philippines)	(632) 857 0899
Tuck Yin Soong (Singapore)	(65) 6231 2838
Elaine Cheong (Singapore)	(65) 6231 2839
Corinne Jian (Taiwan)	(8862) 2734 7522
Patti Tomaitrichitr (Thailand)	(662) 694 7727

Resources / Metals and Mining

Andrew Dale (Asia)	(852) 3922 3587
Graeme Train (China)	(8621) 2412 9035
Carol Cao (China, Hong Kong)	(852) 3922 4075
Pelen Ji (China, Hong Kong)	(852) 3922 4741
Christina Lee (Hong Kong)	(852) 3922 3571
Rakesh Arora (India)	(9122) 6653 3054
Adam Worthington (Indonesia)	(852) 3922 4626
Albert Saputro (Indonesia)	(6221) 515 7340
Polina Diyachkina (Japan)	(813) 3512 7886
Chak Reungsinpinya (Thailand)	(662) 694 7982

Technology

Jeffrey Su (Asia)	(8862) 2734 7512
Stephen Chow (China, Hong Kong)	(852) 3922 3634
Lisa Soh (China)	(852) 3922 1401
Nitin Mohta (India)	(9122) 6653 3050
Damian Thong (Japan)	(813) 3512 7877
David Gibson (Japan)	(813) 3512 7880
George Chang (Japan)	(813) 3512 7854
Michiko Kakiya (Japan)	(813) 3512 7868
Yukihiro Goto (Japan)	(813) 3512 5984
Daniel Kim (Korea)	(822) 3705 8641
Benjamin Ban (Korea)	(822) 3705 8659
Andrew Chang (Taiwan)	(8862) 2734 7526
Daniel Chang (Taiwan)	(8862) 2734 7516
Jimmy Hsu (Taiwan)	(8862) 2734 7533
Kylie Huang (Taiwan)	(8862) 2734 7528

Telecoms

Keith Neruda (Asia)	(65) 6231 2830
Tim Smart (China)	(852) 3922 3565
Lisa Soh (China, Hong Kong)	(852) 3922 1401
Riaz Hyder (Indonesia)	(6221) 2598 8486
Nathan Ramler (Japan)	(813) 3512 7875
Prem Jearajasingam (Malaysia)	(603) 2059 8989
Joseph Quinn (Taiwan)	(8862) 2734 7519
Best Waiyanont (Thailand)	(662) 694 7993

Transport & Infrastructure

Anderson Chow (China, Asia)	(852) 3922 4773
Janet Lewis (Asia, Japan)	(813) 3512 7475
Wei Sim (China, Hong Kong)	(852) 3922 3598
Chang Han Joo (Korea)	(822) 3705 8511
Sunaina Dhanuka (Malaysia)	(603) 2059 8993

Utilities

Adam Worthington (Asia)	(852) 3922 4626
Carol Cao (China, Hong Kong)	(852) 3922 4075
Jeff Evans (India)	(9122) 3356 3053
Ayako Mitsui Boston (Japan)	(813) 3512 7885
Prem Jearajasingam (Malaysia)	(603) 2059 8989
Alex Pomento (Philippines)	(632) 857 0899

Commodities

Jim Lennon	(4420) 3037 4271
Max Layton	(4420) 3037 4273
Jan Stuart	(1 212) 231 2485
Duncan Hobbs	(4420) 3037 4497
Bonnie Liu	(8621) 2412 9008
Graeme Train	(8621) 2412 9035
Rakesh Arora	(9122) 6653 3054

Data Services

Andrea Dailly (Asia)	(852) 3922 4076
Eric Yeung	(852) 3922 4077

Economics

Richard Jerram (Asia, Japan)	(65) 6231 2842
Philip McNicholas (ASEAN)	(65) 6231 2982
Richard Gibbs (Australia)	(612) 8232 3935
Paul Cavey (China)	(852) 3922 3570
Renee Chen (Hong Kong, Taiwan)	(852) 3922 3597

Quantitative / CPG

Martin Emery (Asia)	(852) 3922 3582
Viking Kwok (Asia)	(852) 3922 4735
Burke Lau (Asia)	(852) 3922 5494
George Platt (Australia)	(612) 8232 6539
Patrick Hansen (Japan)	(813) 3512 7876
Ayumu Kuroda (Japan)	(813) 3512 7569
Simon Rigney (Japan)	(813) 3512 7872

Strategy/Country

Michael Kurtz (Asia)	(852) 3922 1403
John Woods (Asia)	(852) 3922 4636
Mark Matthews (Asia)	(65) 6231 2841
Peter Eadon-Clarke (Asia, Japan)	(813) 3512 7850
Jiong Shao (China, Hong Kong)	(852) 3922 3566
Rakesh Arora (India)	(9122) 6653 3054
Ferry Wong (Indonesia)	(6221) 515 7335
David Gibson (Japan)	(813) 3512 7880
Chan Hwang (Korea)	(822) 3705 8643
Kieran Calder (Malaysia)	(603) 2059 8992
Yeonzon Yeow (Malaysia)	(603) 2059 8982
Alex Pomento (Philippines)	(632) 857 0899
Daniel Chang (Taiwan)	(8862) 2734 7516
David Gambrill (Thailand)	(662) 694 7753

Find our research at

Macquarie:	www.macquarie.com.au/research
Thomson:	www.thomson.com/financial
Reuters:	www.knowledge.reuters.com
Bloomberg:	MAC GO
Factset:	http://www.factset.com/home.aspx
CapitalIQ	www.capitaliq.com
TheMarkets.com	www.themarkets.com

Email macresearch@macquarie.com for access

Asia Sales

Regional Heads of Sales

Robin Black (Asia)	(852) 3922 2074
Chris Gray (ASEAN)	(65) 6231 2888
Peter Slater (Boston)	(1 617) 598 2502
Jeffrey Shiu (China & Hong Kong)	(852) 3922 2061
Thomas Renz (Geneva)	(41) 22 818 7712
Andrew Mouat (India)	(9122) 6653 3200
Kenneth Yap (Indonesia)	(6221) 515 1555
JJ Kim (Korea)	(822) 3705 8799
Jason Lee (Malaysia)	(603) 2059 8888
Chris Gould (Malaysia)	(603) 2059 8888
Gino C Rojas (Philippines)	(632) 857 0761
Greg Norton-Kidd (New York)	(1 212) 231 2527
Luke Sullivan (New York)	(1 212) 231 2507
Eric Roles (New York)	(1 212) 231 2559
Sheila Schroeder (San Francisco)	(1 415) 762 5001

Regional Heads of Sales cont'd

Miki Edelman (Taiwan)	(8862) 2734 7580
Angus Kent (Thailand)	(662) 694 7601
Michael Newman (Tokyo)	(813) 3512 7920
Angus Innes (UK/Europe)	(44) 20 3037 4841
Rob Fabbro (UK/Europe)	(44) 20 3037 4865
Sean Alexander (Generalist)	(852) 3922 2101

Regional Head of Distribution

Justin Crawford (Asia)	(852) 3922 2065

Sales Trading

Adam Zaki (Asia)	(852) 3922 2002
Yat Quan Tan (Hong Kong)	(852) 3922 2028
Phil Sellaroli (Japan)	(813) 3512 7837
Matthew Ryan (Singapore)	(65) 6231 2888
Mike Keen (Europe)	(44) 20 3037 4905

Sales Trading cont'd

Chris Reale (New York)	(1 212) 231 2555
Marc Rosa (New York)	(1 212) 231 2555
Stanley Dunda (Indonesia)	(6221) 515 1555
James Aitchison (Korea)	(822) 3705 9990
Kenneth Cheung (Malaysia)	(603) 2059 8888
Michael Santos (Philippines)	(632) 857 0813
Isaac Huang (Taiwan)	(8862) 2734 7582
Dominic Shore (Thailand)	(662) 694 7707

Alternative Strategies

Convertibles - Roland Sharman	(852) 3922 2095
Depository Receipts – Seung-Jin Lee	(65) 6231 1150
Derivatives – Mark Holland	(852) 3922 2081
Futures - Tim Smith	(852) 3922 2113
Structured Products - Andrew Terlich	(852) 3922 2013